

WHAT IS CLAIMED IS:

1. A method for manipulating an image transformation over time,
comprising:
 - selecting a source image from a first frame of a video clip;
 - 5 determining a first animation axis that defines a first two-dimensional transformation of the source image in the video clip over time;
 - selecting a destination image, that the source image will transform into, from a second frame of the video clip;
 - determining a second animation axis that defines a second two-dimensional
 - 10 transformation of the destination image in the video clip over time; and
 - manipulating a transformation of the source image to the destination image by manipulating the second axis.
2. The method of claim 1, further comprising:
 - 15 displaying a schematic hierarchical representation of the source image, the first axis, the destination image, and the second axis, wherein the first axis is a parent of the source image and the second axis is a parent of the destination image;
 - displaying a first connector, in the schematic representation, connecting the source image and the first axis; and
 - 20 displaying a second connector, in the schematic representation, connecting the destination image and the second axis;
3. The method of claim 2, wherein the manipulating is performed in the

schematic hierarchical representation by:

selecting the second axis; and

modifying properties of the second axis.

5 4. The method of claim 1, wherein the manipulating is performed by
manipulating a graphical representation of the second axis that is superimposed over
the destination image.

10 5. The method of claim 1, wherein:
the manipulating comprises rotating the second axis; and
the rotating causes all of the points in the destination image to warp in
accordance with the rotation.

15 6. The method of claim 1, wherein:
the manipulating comprises scaling the second axis; and
the rotating causes all of the points in the destination image to warp in
accordance with the scaling.

20 7. The method of claim 1, wherein:
the manipulating comprises translating the second axis; and
the rotating causes all of the points in the destination image to warp in
accordance with the translating.

8. The method of claim 1, wherein the second transformation is defined by multiple two-dimensional transforms represented by multiple axis.

9. The method of claim 1, wherein the manipulating comprises modifying
5 a point in the second axis to adjust the transformation to the destination image.

10. The method of claim 1, wherein the manipulating comprises realigning the second axis with the source image.

10 11. A method for manipulating an image transformation over time, comprising:

(a) selecting a source image from a first frame of a video clip;

(b) selecting a destination image, that the source image will transform into, from a second frame of the video clip;

15 (c) accepting input from a user for adjusting a coarseness of a lattice structure, wherein:

(i) the coarseness of the lattice structure controls an accuracy for performing a transformation from the source image to the destination image; and

20 (ii) the coarseness of the lattice structure determines how sample points on the source image and the destination image are manipulated with respect to each other during the transformation; and

(d) performing the transformation of the source image to the destination

image in accordance with the coarseness of the lattice structure.

12. The method of claim 11, wherein the input from the user may animate the lattice structure by adjusting the coarseness of a lattice structure to different
5 settings over time.

13. A method for manipulating an image transformation over time, comprising:

selecting a source image from a first frame of a video clip;
10 selecting a destination image, that the source image will transform into, from a second frame of the video clip;
mapping a first sample point from the source image to a second sample point on the destination image;
manipulating a transformation of the source image to the destination image by
15 manipulating the mapping.

14. The method of claim 13, wherein the manipulating comprises modifying the mapping from a first sample point on the source image to a third sample point on the destination image.
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15. The method of claim 13, wherein the mapping is associated with a first point in time.

16. The method of claim 15, further comprising animating the mapping over time by mapping the first sample point from the source image to a third sample point on the destination point at a second point in time.

5 17. An apparatus for manipulating an image transformation over time in a computer system comprising:

(a) a computer having a memory;

(b) a video editing application executing on the computer, wherein the video editing application is configured to:

10 (i) select a source image from a first frame of a video clip;

(ii) determine a first animation axis that defines a first two-dimensional transformation of the source image in the video clip over time;

(iii) select a destination image, that the source image will transform into, from a second frame of the video clip;

15 (iv) determine a second animation axis that defines a second two-dimensional transformation of the destination image in the video clip over time; and

(v) manipulate a transformation of the source image to the destination image by manipulating the second axis.

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18. The apparatus of claim 17, wherein the video application is further configured to:

display a schematic hierarchical representation of the source image, the first

axis, the destination image, and the second axis, wherein the first axis is a parent of the source image and the second axis is a parent of the destination image;

display a first connector, in the schematic representation, connecting the source image and the first axis; and

5 display a second connector, in the schematic representation, connecting the destination image and the second axis;

19. The apparatus of claim 18, wherein the video editing application is configured to manipulate through the schematic hierarchical representation by:

10 selecting the second axis; and
modifying properties of the second axis.

20. The apparatus of claim 17, wherein the video editing application is configured to manipulate by manipulating a graphical representation of the second
15 axis that is superimposed over the destination image.

21. The apparatus of claim 17, wherein:
the video editing application is configured to manipulate by rotating the second axis; and

20 the rotating causes all of the points in the destination image to warp in accordance with the rotation.

22. The apparatus of claim 17, wherein:

the video editing application is configured to manipulate by scaling the second axis; and

the rotating causes all of the points in the destination image to warp in accordance with the scaling.

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23. The apparatus of claim 17, wherein:

the video editing application is configured to manipulate by translating the second axis; and

the rotating causes all of the points in the destination image to warp in accordance with the translating.

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24. The apparatus of claim 17, wherein the second transformation is defined by multiple two-dimensional transforms represented by multiple axis.

15 25. The apparatus of claim 17, wherein the video editing application is configured to manipulate by modifying a point in the second axis to adjust the transformation to the destination image.

26. The apparatus of claim 17, wherein the video editing application is configured to manipulate by realigning the second axis with the source image.

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27. An apparatus for manipulating an image transformation over time in a computer system comprising:

- (a) a computer having a memory;
- (b) a video editing application executing on the computer, wherein the video editing application is configured to:
 - (i) select a source image from a first frame of a video clip;
 - 5 (ii) select a destination image, that the source image will transform into, from a second frame of the video clip;
 - (iii) accept input from a user for adjusting a coarseness of a lattice structure, wherein:
 - (1) the coarseness of the lattice structure controls an
 - 10 accuracy for performing a transformation from the source image to the destination image; and
 - (2) the coarseness of the lattice structure determines how sample points on the source image and the destination image are manipulated with respect to each other during the transformation; and
 - 15 (iv) perform the transformation of the source image to the destination image in accordance with the coarseness of the lattice structure.

28. The apparatus of claim 27, wherein the input from the user may animate the lattice structure by adjusting the coarseness of a lattice structure to
20 different settings over time.

29. An apparatus for manipulating an image transformation over time in a computer system comprising:

(a) a computer having a memory;
(b) a video editing application executing on the computer, wherein the video editing application is configured to:

- 5 (i) select a source image from a first frame of a video clip;
(ii) select a destination image, that the source image will transform into, from a second frame of the video clip;
(iii) map a first sample point from the source image to a second sample point on the destination image;
(iv) manipulate a transformation of the source image to the
10 destination image by manipulating the mapping.

30. The apparatus of claim 29, wherein the manipulating comprises modifying the mapping from a first sample point on the source image to a third sample point on the destination image.

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31. The apparatus of claim 29, wherein the mapping is associated with a first point in time.

32. The apparatus of claim 31, wherein the video editing application is
20 further configured to animate the mapping over time by mapping the first sample point from the source image to a third sample point on the destination point at a second point in time.